



Source Water Assessment Program (SWAP) Report for Rowe Elementary School

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

Date Prepared:
September 21, 2001

Table 1: Public Water System (PWS) Information

<i>PWS Name</i>	Rowe Elementary School
<i>PWS Address</i>	Pond Road
<i>City/Town</i>	Rowe, Massachusetts
<i>PWS ID Number</i>	1253007
<i>Local Contact</i>	Mr. Robert Clancey
<i>Phone Number</i>	413-339-8381

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well #1	1130002-01G	100	421	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Rowe Elementary School is a rural elementary school located on the west side of Pond Road. The school student and staff population is approximately 75 people per day and is served by a single potable supply well (Well #1) located northeast of the school. The well is located within a vault in the parking lot of the school. The pit is bermed and has a locking bilco type hatchway.

The well has a Zone I protective radius of 100 feet and an Interim Wellhead Protection Area (IWPA) radius of 421 feet based on an average maximum daily withdrawal rate from metered usage data. The protective radii were based on the average daily-metered

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

water use for the two highest months on record. Please refer to the attached map that shows the Zone I and IWPA. The Zone I is the area immediately around the wellhead while the IWPA is a larger area that likely contributes water to the wellhead. The IWPA is only an interim protection area; the actual area of contribution to the wellhead may be larger or smaller.

The 6-inch diameter well is drilled to a depth of approximately 300 feet below ground. There is no record of the materials encountered during drilling of the well. Bedrock outcrops were observed in the vicinity of the school during the site visit indicating relatively shallow depth of bedrock. The geologic mapping of the area indicates till underlying the school with the bedrock identified as grey to green medium grained schist of the Moretown Formation dating from the Ordovician. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the bedrock aquifer. The water does not require and is, at the time this report was prepared, not treated. You may request additional information regarding the quality of the water from the local contact listed in Table 1.

Please refer to the following section, attached maps of the Zone Is and IWPAs and Table 2 for additional assessment information.

2. Discussion of Land Uses in the Protection Areas

During the assessment, very few land uses and activities within the drinking water supply protection areas were identified as potential sources of contamination.

Key issues include:

1. **Underground fuel oil storage tank (UST)**
2. **Septic System**
3. **Floor drain in boiler room**
4. **Parking and roadway**

Although the Town owns the entire Zone I area, there are activities within Zone I that are not related to water supply. The well is located in an aquifer with a high vulnerability to contamination due to the absence of a significant hydrogeologic barrier to prevent contaminant migration from the surface. The overall ranking of susceptibility to contamination for the well is high, based on the presence of at least one high threat land use or activity in the IWPA, as seen in Table 2.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Underground Storage Tank (UST, fuel oil)	No	Yes	High	Double walled tank with monitoring 135 feet from well
Septic System components	No	Yes	Moderate	Refer to the attached septic system fact sheet.
Floor Drain in the boiler room to septic system	Yes	Yes	Moderate	Floor drain must be protected from accidental spills or connected to tight tank.
Parking area and roadway	Yes	Yes	Moderate	Grassy drainage swales in Zone I

- **-For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

1. Underground fuel oil storage tank – The school's underground fuel oil tank and propane tank are located within the IWPA of the school well. The oil tank is located 135 feet from the well and is double walled with a monitoring system. The propane tank, also located within the IWPA, poses a minimal threat to water quality due to the gaseous nature of propane if released.

Recommendations:

- ✓ Diligently monitor the status of the tanks and the delivery of oil.
- ✓ Consider long term planning of replacing the UST after its useful life with an above ground tank with containment.

2. Septic system components in the IWPA - The septic tank, grease trap, pipeline and distribution box are all within the IWPA of the well. A very small portion of the leach field is also on the perimeter of the IWPA. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems or discharge from the boiler room are also potential sources of contamination to the water supply.

Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator. In order to participate in a Community Hazardous Waste Pick-up day, the school must be registered as a Very Small Quantity Generator.
- ✓ Refer to the appendices for more information regarding septic systems. The school is currently not registered as a generator of hazardous waste or waste oil. If you wish to participate in the Town household hazardous waste pick-up day, review the enclosed document "A SUMMARY OF REQUIREMENTS FOR SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE" to determine regulatory requirements.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis.

2. Floor drain in the boiler room – Floor drains may be required in boiler rooms to provide drainage in the event of a plumbing failure. If there is a potential for hazardous materials to flow accidentally into the floor drain, however, preventive measures should be taken. Floor drains in an area that contains hazardous materials must be discharged to a sewer or a tight tank. The boiler room at the Rowe Elementary School has a floor drain that is assumed to discharge to the septic system.

Recommendations:

- ✓ Oil lines from the tank to the boiler can be sleeved so that any leaks would drain back to the tank or minimal oil would leak to the boiler room. A written policy and plan should be in place during maintenance operations, especially when oil filters are changed. Require your boiler maintenance contractor to use containment, protect the drain and have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. Please note that boiler blow down generated during routine maintenance cannot be discharged through the floor drain and must be disposed of off site.
- ✓ If protection of the floor drain cannot be assured, a tight tank must be installed for the floor drain.

3. Parking and roadway - The well is located within the school parking lot and the roadway is within the IWPA of the well. Parking lot and schoolyard drainage consists of an earthen swale. Drainage the school is discharged

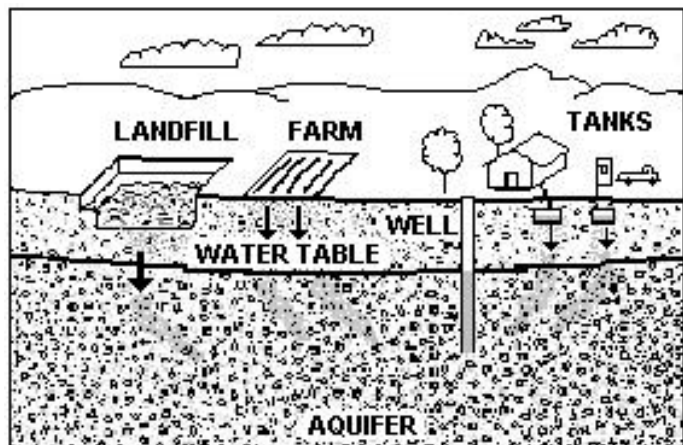


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws/ including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, and the local media.

approximately 200 feet from the well to an area that topographically drains away from the wellhead.

Recommendations:

- ✓ Use minimal road salt and deicers.
- ✓ Monitor the parking lot for spills and leaks.
- ✓ Maintain a buffer from parking near the well.

Other land uses observed were the storage shed just outside the Zone I and the pole mounted power transformer approximately 75 feet from the well. Be sure to store all petroleum products in secondary containment and contact the power utility to ensure that the fluid in the transformer does not contain PCBs. Implementing the previously noted and following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Rowe Elementary School is commended for current protection measures.

Please review and adopt the key recommendations listed above and as follows:

Zone I and IWPA:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I.
- ✓ Monitor oil delivery and storage.
- ✓ Continue to prohibit parking immediately adjacent to the well vault and monitor the parking area for spills and leaks.
- ✓ Consider replacement of the well if Zone I threats cannot be mitigated.
- ✓ Post drinking water supply signs key location such along the access road to the school.
- ✓ Provide information to staff about the potential hazards of household chemicals, lawn care chemicals and fertilizers.
- ✓ Do not use fertilizer or pesticides.
- ✓ Use Best Management Practices (BMPs) for household hazardous products.

Training and Education:

- ✓ Incorporate groundwater education into school curriculum (K-6 curricula available; contact DEP for copies).

Facilities Management:

- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.

Planning:

- ✓ Work with local officials to include the school well's IWPA in an Aquifer Protection District Bylaws and to assist you in securing protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands.

Keep the phone number of a bottled water company readily available.

- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note that each program year, on or about May 1 the Department posts a new Request for Response (RFR), grant application form. Generally, the applications are due on or about June 30. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure
- Grant Program Fact Sheet
- Source Protection Sign Order Form
- Very Small Quantity Generator (VSQG) information